CLAIMS

What is claimed is:

1. A method for generating a model of preferences of a decision-maker, comprising the steps of:

identifying a set of alternatives to be presented to the decision-maker;

identifying a set of attributes associated with the alternatives;

characterizing the alternatives by obtaining a set of values for the attributes of each alternative;

obtaining a sample set of pair-wise preferences among a subset of the alternatives;

evolving the model of preferences by iteratively generating a set of candidate models and evaluating the candidate models using a fitness measure which is based on the sample set of pair-wise preferences.

2. The method of claim 1, wherein the step of evolving includes the steps of:

constructing a population of the candidate models, each candidate model capable of expressing a modeled pair-wise preference between any two of the alternatives in response to the values for the attributes;

evaluating the candidate models from the population by examining the modeled pair-wise preferences of each candidate model over a subset of the alternatives and deriving a fitness measure which includes at least one criterion that penalizes the candidate models for disagreeing with the sample set of pair-wise preferences;

examining the population for one whose fitness measure meets a termination criterion.

3. The method of claim 2, wherein the criterion penalizes the candidate models based on a number of the sample set of pair-wise preferences that disagree with the modeled pair-wise preferences.

4. The method of claim 2, wherein the step of obtaining a sample set of pair-wise preferences includes the steps of obtaining an indication of preference strength such that the penalty for disagreeing with the sample set of pair-wise preferences is based on the indication of preference strength.

5. The method of claim 2, wherein the candidate models each express the modeled pair-wise preferences by returning a number representing a utility value.

6. The method of claim 2, wherein the candidate models are each of a type from a set that includes a computer program type, a mathematical expression type, a neural network type, and a belief network type.

7. The method of claim 2, wherein the step of evolving further includes the step of constructing a new population from the population based on the fitness measures of the candidate models.

8. The method of claim 7, wherein the step of constructing a new population includes the steps of:

selecting a subset of the candidate models based on the fitness measures;

generating a set of new candidate models for the new population based by combining portions the selected subset of candidate models.

9. The method of claim 8, wherein the step of generating a set of new candidate models includes the step of combining portions the selected subset of candidate models using genetic operations.

10. The method of claim 1, wherein the step of obtaining the sample set of pair-wise preferences comprises the step of obtaining the sample set of pair-wise preferences from the decision-maker.

11. The method of claim 1, wherein the step of obtaining the sample set of pair-wise preferences comprises the step of obtaining the sample set of pair-wise preferences from a set of one or more other decision-makers.

12. The method of claim 11, wherein the step of obtaining the sample set of pair-wise preferences from the other decision-makers includes the step of obtaining a common agreement among the other decision-makers for the sample set of pair-wise preferences.

13. The method of claim 1, further comprising the step of:

identifying a set of characterization attributes that may be associated with the decision-maker;

obtaining a set of values for the characterization attributes from a set of sample decision-makers from

which the sample set of pair-wise preferences are obtained.

14. The method of claim 13, wherein the step of obtaining a set of values for the characterization attributes comprises the step of obtaining from the decision-maker a set of answers to a set of multiple choice questions.

15. The method of claim 13, wherein the step of evolving includes the steps of:

constructing a population of the candidate models, each candidate model capable of expressing a modeled pair-wise preference between any two of the alternatives in response to the values for the attributes and the values for the characterization attributes;

evaluating the candidate models from the population by examining the modeled pair-wise preferences of each candidate model over a subset of the alternatives and sample decision-makers and deriving a fitness measure which includes at least one criterion that penalizes the candidate models for disagreeing with the sample set of pair-wise preferences and corresponding values for the characterization attributes;

examining the population for one whose fitness measure meets a termination criterion.

16. The method of claim 1, wherein the step of obtaining a sample set of pair-wise preferences includes the steps of presenting the alternatives to the decision-maker and obtaining from the decision-maker a ranking of the alternatives.

17. The method of claim 1, wherein the step of obtaining a sample set of pair-wise preferences comprises the step of presenting a textual description of each alternative.

18. The method of claim 1, wherein the step of identifying a set of alternatives comprises the step of selecting from a set of realized alternatives.

19. The method of claim 18, wherein the step of obtaining a sample set of pair-wise preferences comprises the step of obtaining from the decision-maker a relative preference between two successive realized alternatives experienced by the decision-maker.

20. The method of claim 1, wherein the step of obtaining a sample set of pair-wise preferences comprises the step of presenting the decision-maker with the alternatives and observing a behavior of the decision-maker in response to the alternatives.

21. A system for designing a presentation including means for selecting between a set of available alternatives each characterized by a set of observable attributes using a model of preferences of a target audience wherein the model is evolved by iteratively generating a set of candidate models and evaluating the candidate models using a fitness measure which is based on a sample set of pair-wise preferences.

22. The system of claim 21, wherein the presentation is customized for a specific member of the target audience.

23. The system of claim 22, wherein the specific member of the target audience is characterized by a set of values of a set of characterization parameters used with the candidate models.

24. The system of claim 21, wherein the presentation is designed to appeal to the target audience as a whole.

25. The system of claim 21, wherein the presentation is one of a set that includes a web page, a sequence of questions, an advertisement, a direct-marketing solicitation, a set of one or more services, a set of one or more products, an establishment of a price of a product, an establishment of a price of a service, a shelf layout in a store, a display in a store, a sequence of actions, a sequence of steps used to diagnose a problem, a design of product, and a design of service.

26. A device for deciding among a set of alternatives each characterized by a set of observable attributes comprising means for storing a preference model constructed by iteratively generating a set of candidate models and evaluating the candidate models using a fitness measure which is based on a sample set of pair-wise preferences.

27. The device of claim 26, further comprising input means that enable a user to enter the observable attributes of the alternatives into the device.

28. The device of claim 27, wherein the input means enable the user to enter a set of values for a set of

characterization parameters of the user that are used with the candidate models.

29. The device of claim 26, further comprising means for obtaining a set of physical measurements associated with the observable attributes.

30. The device of claim 26, wherein the alternatives each represent one from a set that includes one or more services offered for sale and one or more products offered for sale.

31. The device of claim 26, wherein the alternatives include taking an action and not taking an action.

32. The device of claim 26, wherein each alternative represents a way of customizing a service.